

TO: Reid M. Wakefield, Esq. & Robert L. Kilroy, Esq.
Mirick, O'Connell, DeMallie & Lougee, LLP

FROM: Ella A. Kazerooni, M.D., M.S.

DATE: September 30, 2021

RE: Expert Report of Ella A. Kazerooni, M.D., M.S.
Charu Desai, M.D., v. UMass Memorial Medical Center, Inc., et al.

I. Qualifications

I am currently a Professor in Department of Radiology, Division of Cardiothoracic Radiology, and the Department of Internal Medicine, Division of Pulmonary and Critical Care Medicine, at the University of Michigan Medical School. I was appointed as a Professor in the Department of Radiology in 2003, having previously been appointed as an Associate Professor in 1998, and an Assistant Professor in 1993. I served as the Director of the Cardiothoracic Radiologist Division from 2000 to 2019, the Associate Chair for Clinic Affairs from 2008 to 2019, and as the Interim Chair of the Department of Radiology from April 2018 to July 2019. I am currently the Associate Chief Clinical Officer for the Diagnostics and Clinical Information Oversight Team for the University of Michigan Medical Group.

I am a board-certified radiologist. I received my Doctor of Medicine degree from the University of Michigan in 1988, as well as a Master's Degree in Clinic Research Design and Statistical Analysis from the University of Michigan in 1997. I completed a Residency in Diagnostic Radiology at the University of Michigan and a Fellowship in Thoracic Imaging at Massachusetts General Hospital/Harvard Medical School in 1992.

I have had held a variety of clinical appointments, hold several certifications, have served on various editorial boards for radiology journals, and have undergone significant education and training in the field of medicine and radiology. I have held leadership positions in, including serving as President of, the Association of University Radiologists, the American Roentgen Ray Society, the Society of Thoracic Radiology, and the Radiology Alliance for Health Services Research. I additionally served as an Elected Member of the Fleischner Society from 2002 to 2011 and as a Trustee of the American Board of Radiology from 2007 to 2016. I have lectured, researched, and published extensively in the field of thoracic radiology.

Through my education and training, clinical work, appointments and positions held, academic research and publications, and review of relevant literature, I am familiar with the standard of care regarding the practice of thoracic radiology, and, in particular, the standard for the clinical review of CT images of the chest.

A complete and accurate copy of my current curriculum vitae is attached as **Exhibit A**, which includes a summary of my qualifications and a list of all publications I have authored in the previous ten years.

II. Facts and Data Considered and Summary of Review

I reviewed images from fifty CT studies, identified as QACH01-QACH50, along with the corresponding reports from each study, identified as UMM 00553-UMM 00689. These images and reports were de-identified and did not include the identification of the patient, the reading radiologist, or the medical facility from where the images originated. I was not provided this information, and I performed a review of these materials blinded. I reviewed the images and reports, and, for the following twenty-five studies, I formed an opinion as to whether I agreed with the reviewing radiologist's findings (who I subsequently learned was Charu Desai, M.D.), whether I identified a minor or major error, and whether the error is likely to have affected patient care: QACH05, QACH06, QACH07, QACH08, QACH09, QACH10, QACH11, QACH29, QACH30, QACH31, QACH32, QACH33, QACH34, QACH35, QACH36, QACH37, QACH38, QACH39, QACH40, QACH41, QACH42, QACH43, QACH44, QACH49, QACH50. I also formed an opinion regarding the reviewing radiologist's findings (who I subsequently learned were other/another radiologist(s) in a "control" group) as to studies QACH20, QACH24, and QACH46.

I subsequently reviewed a spreadsheet with the opinions of a previous reviewer (who I subsequently learned was an independent reviewer who was not affiliated with UMass Memorial, Diana Litmanovich, M.D., of Beth Israel Deaconess Medical Center/Harvard Medical School) on ten of the studies: QACH08, QACH09, QACH10, QACH11, QACH30, QACH33, QACH34, QACH38, QACH42, and QACH50. This document is identified as UMM 30806. This document did not identify the radiologist reviewing each study. I was informed that this independent reviewer reviewed the same materials as identified above and was asked to render opinions within the same parameters as described above.

I then reviewed the Expert Report of James F. Gruden, M.D., dated July 30, 2021, who was retained by Dr. Charu Desai, and compared Dr. Gruden's opinions with my own opinions based on my review, as to studies QACH08, QACH09, QACH10, QACH11, QACH20, QACH24, QACH30, QACH33, QACH34, QACH38, QACH42, QACH46, and QACH50. At this time, I was informed for the first time as to which of these studies were reviewed by Plaintiff, Dr. Charu Desai (QACH08, QACH09, QACH10, QACH11, QACH30, QACH33, QACH34, QACH38, QACH42, and QACH50), or were reviewed by other radiologists (QACH20, QACH24, and QACH46).

III. Statement of Opinions

Based on my initial, blinded review of the 25 studies¹ as described above, I found that 12 had major errors in interpretation, and that 15 had errors that may have affected patient care.² Thus, when the reviewing radiologist of these studies was subsequently disclosed as Charu Desai, M.D., my review revealed that 48% of the reviews conducted by Dr. Desai had major errors and that 60% of the reviews conducted by Dr. Desai had errors which may have affected patient care.

The following is a summary of my opinions based on my conclusions from my blinded review, in comparison with Dr. Gruden's opinions set forth in his Expert Report. Part I contains my opinions for the 10 cases which I now understand were read by Charu Desai, M.D., and on which Dr. Gruden opined; Part II contains my opinions of 6 additional cases which I now understand were reviewed by Dr. Desai, in which I found major errors or those which may have affected patient care and which were not addressed by Dr. Gruden; and Part III contains my opinions for the 3 cases which I now understand were read by "control" radiologists from the initial grouping of 50 cases.

In summary, I disagree with most but not all of the assessments provided by Dr. Gruden of the cases listed in Part I. These examinations, which I now understand were read by Dr. Desai, include missed findings, inaccurate and incomplete description of abnormalities, and lack of reporting in accordance with professional society consensus recommendations and nomenclature used by thoracic radiologists, which were not mentioned by Dr. Gruden. For the cases listed in Part II, which I now understand were also reviewed by Dr. Desai, Dr. Gruden did not provide any findings at all, although they contain major errors and/or errors which may affect patient care. For the cases listed in Part III, I now understand that these were read by "control" radiologists, and disagree with Dr. Gruden's assessments in all three cases. In 2 of the 3 cases there were minor errors which would not impact patient care, and in the third there was a major finding missed by the reader which is not the missed finding described by Dr. Gruden. Two of these three cases suffered from lack of proof reading, as stated by Dr. Gruden, but none reach the level of a report leading to "immediate disciplinary action" as a stand-alone exam as described by Dr. Gruden.

The standard of care applied by Dr. Gruden in the cases listed in Part I is a lower standard than was applied in the 3 cases of Part III. Since my initial review was blinded as to the interpreting radiologist and which were read by Dr. Desai, this raises the question of bias in the reviews performed by Dr. Gruden, as it is clear from his own review report that he knew which cases were read by Dr. Desai and which were read by the other "control" radiologists.

¹ QACH05, QACH06, QACH07, QACH08, QACH09, QACH10, QACH11, QACH29, QACH30, QACH31, QACH32, QACH33, QACH34, QACH35, QACH36, QACH37, QACH38, QACH39, QACH40, QACH41, QACH42, QACH43, QACH44, QACH49, QACH50.

² While in my initial review of case QACH50 I found a major error that may affect patient care, upon my review of the opinion of Dr. Litmanovich and a re-evaluation of the study, I determined that my observation was not an error, and I agree with Dr. Gruden's opinion, as discussed below.

Part I: QACH08, QACH09, QACH10, QACH11, QACH30, QACH33, QACH34, QACH38, QACH42, and QACH50.

QACH08 – There are two major findings that may impact patient care. I disagree with Dr. Gruden’s opinion

- 1) Major: Incorrect finding description and diagnosis – What is described as “No significant change right lower lobe and right middle lobe consolidation” is right lower lobe abnormality that has the appearance of rounded atelectasis with enhancement adjacent to pleural thickening and is not that of a consolidation that is seen with pneumonia. This type of finding is chronic and does not require treatment or follow up. This inaccuracy was not described by Dr. Gruden.
- 2) Major: Missed finding - There is a high density 3 cm mass-like focus of material in the left pleural space near the lingula that was not described. This is consistent with acute hematoma indicative of bleeding after surgery or related to the surgery. In the setting of prior surgery may represent clumped up talc from talc pleurodesis which may be associated with failure of pleurodesis effectiveness and contribute to re-accumulation of pleural air and or fluid. This missed finding was not mentioned by Dr. Gruden.

QACH09– Overall no major issue, and I am in agreement with Dr. Gruden’s opinion. I have minor disagreement in the use of terminology and the weighting of the probability of pneumonia over edema remains in question for a thoracic radiologist.

Infection may be more likely than edema in this case, and the reader mentioned both, with the language used favoring pneumonia over edema - “*combination of pneumonia and mild edema.*” A treating physician would take that information in clinical context in the rest of the patient’s picture. Mild to moderate emphysema was identified by the interpreting radiologist and included in the report. In the presence of emphysema, edema can have an atypical appearance that mimics pneumonia, and it is possible that all of the findings could be explained by pulmonary edema. This is consistent with Dr. Gruden’s findings.

QACH10 – There is a major error with incorrect description and identification of findings, and no diagnosis or differential diagnosis is given. Taken together this may have a major impact on patient care. There is also a minor error in nomenclature that impacts report interpretation and intended meaning. I disagree with Dr. Gruden’s opinion.

- 1) Major: Right upper and lower lobe findings are incompletely described and attributed etiologies are not specified. The findings are peribronchiolar ground glass with some small airway wall thickening and lower lobe small airway endobronchial material are consistent with aspiration as the etiology for the patient’s symptoms. Clinically this would usually lead to additional testing to look for gastroesophageal reflux and aspiration, which may result in specific medical or surgical interventions to treat and prevent recurrence. Dr. Gruden’s review does not address this.

In the report, the findings are described as below, with no mention of etiology, no mention of endobronchial material, airway thickening or peribronchiolar location of the ground glass, and no mention of aspiration as a cause of the findings. No differential diagnosis was provided. “2. *Minimal infiltrate posterior basal segment of the right and left lower lobe, right greater than left and posteriorly in the right upper lobe.*” And “3. *Generalized groundglass opacity probably combination of poor lung expansion and vascular congestion.*” Dr. Gruden’s review does not address this.

- 2) Minor: The reader uses the following language - “*Minimal generalized groundglass opacity probably secondary to vascular congestion*” which does not make sense and is not currently used terminology. If the reader thinks this is diffuse pulmonary edema causing this finding that should be described as such. When lung volumes are low, as they are in this case, the vessels will become crowded, the lungs lighter density due to less air within them, and the volume of the lung that is made up of vessels relative to lung tissue increases. The term vascular congestion is not described in the Fleischner Society’s glossary of terms for thoracic radiology, a longstanding resource for thoracic radiologists and used in thoracic radiology teaching, published in the major journal *Radiology*. Dr. Gruden’s review does not address this.

QACH11 – There is a major error in the incorrect description of findings and the etiology that they are given, that may have a major impact on patient care, and minor error in nomenclature that impacts report interpretation and intended meaning.

- 1) Major: There is no bilateral lower lobe consolidation as reported. The lung volumes are low and there are small pleural effusions and mild adjacent enhancing compressive atelectasis. The reader correctly mentions a small focus of central right upper lobe consolidation which may represent pneumonia. Altogether, the findings as described overestimate the extent of infection considerably. Dr. Gruden’s review does not address this.
- 2) Minor: Same as #2 in QACH10.

QACH30 – Major finding not reported and not put in context of the lung findings, that together may impact patient care. I disagree with Dr. Gruden’s opinion.

- 1) Major: There is no mention made of the extensive material in the trachea, which may represent secretions or aspirated material. The predominance of the consolidation is bibasilar with peribronchial ground glass/nodularity. The airway finding is particularly relevant, as the combination of the two strongly suggest aspiration as the etiology of the lung disease, and not infection. Clinically this would usually lead to additional testing to look for gastroesophageal reflux and aspiration, which may result in specific medical or surgical interventions to treat and prevent recurrence, instead of treating only for infection.

Additional comment: Dr. Gruden’s review states that “*Secretions in the trachea (not mentioned and raised as a criticism) are present in many patients with pneumonia (and*

COPD) and failure to mention this finding is not at all important in this instance. It is really a subjective decision by the radiologist as to whether this finding is significant enough to place in the report (it was not in this case).” From my discussion above, these findings are important and specifically relevant in this case.

QACH33 – There are several collectively major misreportings of findings and attribution to etiologies which together may have a major impact on patient care. I disagree with Dr. Gruden’s opinion.

- 1) Emphysema is mild, not moderate, therefore the impression of moderate COPD is overestimated. This is not addressed by Dr. Gruden.
- 2) There is extensive lower lobe honeycombing with traction bronchiectasis consistent with pulmonary fibrosis; the honeycomb cysts are on the larger spectrum of what is seen in pulmonary fibrosis and within the spectrum of what is seen in this disease entity - this is not described as pulmonary fibrosis. This is not addressed by Dr. Gruden.
- 3) There are air-fluid levels in the right lower lobe posterobasilar honeycomb cysts with adjacent consolidation may represent infection/aspiration or traumatic injury, however in some areas it also looks mass like. Since the reader mentions in the report that the patient has a history of right lower lobe small cell cancer, it is very likely that this represents that cancer. In a cancer patient, comparison to prior exams is critical, and if none are available from the practitioner that is reading the exam, the reader should state in the impression of the report the importance of comparing to prior exams from other facilities to better understand this finding as it relates to progression or lack thereof, in this patient’s lung cancer. This is not addressed by Dr. Gruden.
- 4) The description of bilateral upper lobe paramediastinal fibrosis is correct, however it is more than “mild” as reported. Whenever this finding is seen, the radiologist should include that this may be related to prior radiation therapy. This is not addressed by Dr. Gruden.

QACH34 – Combination of incorrect use of terminology, incomplete detection and description of findings, and lack of differential diagnosis for etiology, which together are major errors and impact patient care. I disagree with Dr. Gruden’s opinion.

- 1) Major: The term “reticulonodular infiltrate” for the left lower lobe abnormality is incorrect and non-specific, and no etiology for this finding is given. The correct description is mild mid and lower lung small airway wall thickening with scattered small airway endobronchial material and peribronchiolar alveolar opacities, the latter being greatest in the left lower lobe, and also seen in the right middle and lower lobes. This constellation of findings makes aspiration a leading etiology. Clinically this would usually lead to additional testing to look for gastroesophageal reflux and aspiration, which may result in specific medical or surgical interventions to treat and prevent recurrence, instead of treating only for infection. The differential diagnosis may include acute bronchitis or acute on chronic small airway disease exacerbation with mucous

plugging, in which case maximizing airway disease treatment would play a role in the treatment plan. This is not addressed by Dr. Gruden.

- 2) Major: Coronary calcification is described as present in two-vessels, however the severity is not described. The visual scoring system of none, mild, moderate or extensive has been endorsed in a multisociety guideline which includes the Society of Thoracic Radiology. In this case the calcification is extensive, and is greater than expected for the patient's age, making it a significant incidental finding. Severity should have been reported, and this finding called out in the impression. This is not addressed by Dr. Gruden.
- 3) Minor: Emphysema is a specific finding and diagnosis, and a subset of cause of "COPD." To say COPD in the impression is less specific. There are several imaging phenotypes of COPD including emphysema predominant COPD, small airway predominant COPD and a mixed pattern that includes both. This was not addressed by Dr. Gruden.

QACH38 – Combination of inaccurate and incomplete description of findings which are major and minor, and may impact patient care based on the minor findings. I disagree with Dr. Gruden's opinion.

- 1) Major: The reader of the CT exam got to aspiration as a diagnosis, based on inaccurate and incomplete recognition of findings, stating only "*Minimal bilateral lower lobe posterior basal segment infiltrate question aspiration.*" There is lower lobe bronchial wall thickening with focal bronchiectasis and endobronchial material in the right lower superior segment, and relatively low attenuation of that lung compared to the rest of the lungs of this patient, which can be attributed to air trapping on this poor inspiratory acquisition (note the tracheal posterior wall is bowed inwards which is a finding we use to confirm that an exam is done at expiration). There is also diffuse esophageal dilatation which was not mentioned in the report, which suggests reflux of contents from the stomach in to the esophagus, placing the patient at increased risk of aspiration. This confidence in the diagnosis by the description of the lung findings and esophageal abnormality would prompt the referring physician to test for gastroesophageal reflux and aspiration. This was not addressed by Dr. Gruden.
- 2) Minor: Porcelain aorta with severe circumferential atherosclerotic calcification is not mentioned. This is not addressed by Dr. Gruden.
- 3) Minor: Coronary calcification is described in 1-vessel, however the severity is not described. In this case it is extensive and not unexpected for the patient's age of 80 years. See item QACH34, item #2 for further detail on reporting coronary arterial calcification. This was not addressed by Dr. Gruden.

Dr. Gruden states in his review that "*Airway inflammation is basically always present in patients who smoke and who have emphysema and underlying small airway obstruction is also uniform in this population.*" Just because individuals with a smoking history are more likely to have disease, does not mean a radiologist should not describe the findings and impression in the radiology report. The presence or absence of these findings is important in

phenotyping and management of their COPD towards reducing the increased frequency of infection and COPD exacerbations, often requiring hospitalizations. There are many individuals who smoke who have none of these findings, some have mild disease, and others have more extensive disease. To be silent on this topic in the report leaves the reader of the report to assume the findings are not present if not mentioned. These patients also have a higher likelihood of having lung nodules and cardiovascular disease, and a radiologist would not exclude those findings from reports.

QACH42 – No major concerns that would impact patient care, and I am in agreement with Dr. Gruden’s opinion in this respect. However, there are two minor issues relevant to the standard for a thoracic radiologist. Minor concern #2 may impact patient care.

- 1) Minor: The reader correctly identified and described a lung nodule at the right lung apex in this patient where the clinical history on the report indicates “Squamous cell carcinoma of right tonsil” and “*Reason for Study ME-NEWLY DIAGNOSED HEAD AND NECK CANCER, 12MM PULMONARY NODULE SHOWN ON NECK CTA*”. This new lung nodule, upper lobe in location, in a patient with a head & neck cancer has a higher probability of being a new lung cancer than a metastasis, and that would be preferred and specialty specific reporting for a thoracic radiologist to use. Factually, to state “metastatic disease vs second primary” in the report impression is correct, as metastasis is part of the differential diagnosis. For either of these etiologies the follow up testing that would ensue would be similar, such as PET scan, biopsy or in some cases short term follow up CT, depending on other factors on the clinical history.
- 2) Minor: “*Slightly enlarged left lower paratracheal and AP window lymph nodes*” are described. These are normal sized by CT criteria which is less than 10 mm in short axis diameter. Reporting them as enlarged could lead to additional imaging or biopsy unnecessarily. This was not addressed by Dr. Gruden.

QACH50 – I agree with Dr. Gruden’s opinion.

Part II: QACH32, QACH35, QACH36, QACH37, QACH43, QACH44

QACH32 – There are two minor concerns, that may impact patient care by leading to overtesting, addition radiation exposure in one case, and potentially cost to a patient in both cases.

- 1) Minor: The interpreting radiologist describes “*Multiple bilateral noncalcified intrapulmonary pulmonary and pleural base nodules ranging in size from 2 to 7 mm*” and provides a recommendation in the report for a “*followup CT scan in 3 months.*”

Based on the clinical history on the radiology report, no history of cancer was provided and these nodules are therefore considered incidental findings. Based on the largest nodule size of 7 mm, the follow up recommendation from the well-recognized Fleischner Society Guideline for the management of incidentally detected lung nodules in 2017 at the time this exam was performed and interpreted, recommended a follow up chest CT in

6-12 months if the patient is at low risk for lung cancer, and 3-6 months if the patient is at a high risk of lung cancer due to smoking history. To default to the lowest time frame of 3 months as a standard of practice would result in the overuse of CT in clinical practice. It is well recognized that a 3-month CT is too short a time frame to detect nodule growth for nodules of this size, therefore to make this a standard recommendation provides little if any incremental value for the majority of patients with indeterminate nodules which are either slowing growing or do not grow with time. Furthermore, there is no evidence from the report that this patient is at high risk for lung cancer to make a 3-month recommendation. For example, there is no emphysema, a finding associated with cigarette smoking, which places a patient at an increased risk of lung cancer.

- 2) Minor: There are 2 partially visualized renal cysts, one in the right kidney and one in the left kidney. Both are partially visualized, and the components seen have all the features of simple cysts. The interpreting radiologists stated “*Suggest ultrasound.*” Earlier in the report the reader indicates the patient is having a thoracic spine CT the same day. Two comments. First, looking at the thoracic spine may include the rest of the renal cysts, and looking at those images may avoid future testing. Second, in a patient of 59 years of age, they may have had abdominal imaging previously, and it would be worthwhile to recommend comparison to prior imaging first, and if there is none, to consider ultrasound.

QACH35 – Incomplete description of findings and understanding of their etiology, which may impact patient care and future health outcomes through over-, under- or inappropriate testing, and failure of disease prevention, which are major concerns.

- 1) Major: The lung findings are incorrectly described and interpreted. The reader uses many different descriptions and does not provide any synthesis towards a diagnosis, and then recommends a follow up CT scan in 3 months, for which no basis is provided. Language used includes: “*Generalized groundglass opacity in the lungs probably secondary to mild edema,*” “*Mosaic attenuation with areas of air trapping, suggestive for small airway disease,*” and “*Bilateral small pleural-based opacities in the right and left lung most likely small focal areas of plate atelectases, very less likely lung nodules. Small focal consolidation in the lingula.*”

The dominant pattern is a diffuse mosaic pattern composed of areas of increased lung density known as ground glass, decreased density, and normal density lung tissue, with marked diffuse small airway wall thickening that nearly obliterates the airway lumen. The ground glass being described as edema is an incorrect attribution of the finding to that diagnosis, when it is part of the mosaic pattern. Given the associated esophageal dilatation, chronic aspiration should be given as a leading diagnosis, for which next steps might be a pH probe test or esophagram. Other causes of small airway disease would follow next such as asthma and bronchitis, followed by superimposed infection in the lower lobes.

- 2) Major: Coronary calcification is described as present in three-vessels, as follows from the radiology report: “*Left anterior descending , circumflex and right coronary artery*

calcification.” However, the severity of calcification is not described. See comments on reporting QACH34 and QACH38 in the importance of reporting severity. In a 56-year-old female this may be greater than expected and indicate a high risk for future coronary events, which can be mitigated through preventive therapy. Absent visual quantification, this could lead to an unnecessary coronary calcium CT or even a stress test if the calcium is mild, and lack of testing if it is more extensive.

QACH36 – The findings are both incompletely described and synthesized into diagnosis, with two major concerns that may impact patient care.

- 1) Major: The interpreting radiologist did not report the dilated ascending aorta, which measures a maximum diameter of 44 mm. Since the finding was not reported the appropriate next steps for the evaluation of this finding would not take place, which may include echocardiography to evaluate the aortic valve, and a follow up CT in 6-12 months. In patients with a dilated aorta for which there is no past imaging to understand the natural history of stability in size or growth, these tests are important in determining the next steps. For patients with hypertension, reinforcing blood pressure control with patients is important to mitigate the risk of an acute aortic abnormality, such as an aortic dissection.
- 2) Major: The lung findings are incompletely described and the differential diagnosis limited. In addition to the more focal ground glass in the left lower lobe consistent with pneumonia, there is ground glass opacity centrally in the lungs, more severe in the left lung than right and more severe in the lower lobes. Given the presence of small pleural effusions that were not mentioned by the interpreting radiologist, and in the context the finding of extensive ascites on this CT exam indicating chronic liver, asymmetric pulmonary edema should be included in the differential diagnosis. Furthermore, the terminology “vascular congestion” to explain lung findings of groundglass is incorrect nomenclature, as fully described under exam QACH10.

QACH37 – Incomplete synthesis of findings into a diagnosis, and failure to mention an important diagnosis, which is a major concern and may impact patient care.

- 1) Major: The interpreting radiologist describes findings without synthesis. Findings described include “*Volume loss left lower lobe. Left lower lobe collapse /consolidation. Probably partially mucus filled bronchi. Question mild bronchiectasis in this region*” and “*Moderately dilated thin-walled fluid-filled esophagus again seen. Question history of achalasia.*” Together these findings are consistent with aspiration caused by achalasia as the reason for the left lower lobe findings.

QACH43 – Nonspecific terminology without integration into a diagnosis is a minor concern.

- 1) Minor: The findings used by the interpreting radiologist are very non-specific, describing the lungs as “*Minimal bilateral lower lobe posterior basal segment infiltrate. Small focal area of reticular nodular opacity in the right upper lobe probably minimal infiltrate.*” The findings are posterobasilar predominant atelectasis

with the low lung volumes. The use of the term “infiltrate” is a term that incorrectly implies consolidation and a diagnosis of pneumonia or aspiration.

QACH44 – Incorrect reporting of an abnormality is a major error that may impact patient care by leading to inappropriate follow up testing or biopsy.

- 1) Major: The "*Slightly enlarged subcarinal and bilateral paraesophageal lymph nodes*" reported are normal in size by the CT criteria of < 10 mm in short axis diameter. Reporting these as abnormal may impact patient care through inappropriate follow up imaging or biopsy, which includes unnecessary radiation exposure and procedural complications

Part III: QACH20, QACH24, and QACH46.

QACH20 – Incompletely detected finding is a major concern and impacts patient care, however, that finding is different than the missed finding described by Dr. Gruden. In addition, the report contains gibberish language and was clearly not proofread before signing, and on this point I agree with Dr. Gruden.

- 1) Major: There is diffuse multifocal air-trapping throughout the lungs on expiration which was not mentioned and indicates small airway disease as an etiology for chronic shortness of breath as the indication for the exam, with etiologies including asthma/bronchitis, and bronchiolitis obliterans. This was my opinion on this exam from my initial blinded review, and I reaffirm this opinion with this additional review of the case. There is no tracheobronchomalacia as stated by Dr. Gruden. When I read Dr. Gruden’s commentary, at first I paused to doubt if I had misreviewed the CT myself, as tracheobronchomalacia is very straightforward to recognize. So I reviewed the CT again an additional two times, and I reaffirm my initial impression.

The findings on this CT are primary intrapulmonary small airway disease, and not large airway disease. On expiration, the appearance of the airway is the normal inward bowing of the posterior tracheal membrane as expected normally with expiration, and in fact is an appearance we teach radiology trainees to recognize when evaluating a chest CT for the degree of inspiration or expiration on the exam.

- 2) The TECHNIQUE section is missing on this report. The LUNG section of the findings is gibberish.

QACH24 – Minor concerns, with no impact on patient care. These lung findings are atypical and challenging, and I disagree with Dr. Gruden’s opinion that there is a clear easy interpretation of this case.

- 1) The lung disease is not well described. The report states “*There are unchanged changes in both lung apices. While these are predominantly paraseptal in location, to perhaps are 2 well-defined with well-defined walls and may reflect cystic change well about bullous disease.*”

Dr. Gruden describes this as a “*classic example of paraseptal emphysema and bullous disease and not cystic lung disease*” which is partially accurate and overly simplistic.

Where I disagree with Dr. Gruden is that the areas of emphysema are atypical in appearance due to their wall thickening; typically emphysema is described as holes in the lungs of low density without wall thickening (see Fleischner Society Glossary of terms), and in paraseptal emphysema there may be visibility of the interlobular septa as very thin lines, but not to the extent and severity of wall thickening seen in this case around both the paraseptal emphysema and the centrilobular emphysema. When wall thickening is seen in emphysema, it usually occurs when there is ground glass opacity (increased lung density) in the adjacent lung tissue, which there is in this case. That finding of ground glass suggests superimposed respiratory bronchiolitis in an individual who smokes cigarettes. This is not a common occurrence and in that respect this case is an outlier in complexity.

In addition, with the findings described as unchanged over 7 years, and the indication for the CT being “Abnormal CT Chest Scan”, this likely has little impact on patient care, and reinforces the diagnosis.

QACH46 – Overall agree with the findings; minor concerns with no impact on patient care. I disagree with Dr. Gruden’s statement that there is no RV strain.

- 1) Minor: There is a lack of proof-reading the report before signing, as also stated by Dr. Gruden, with no potential impact on patient care.
- 2) Minor: RV strain was described by the reporting radiologist; there is an additional finding of RV strain which is flattening of the ventricular septum not mentioned by the reader, which is a minor additional nuance I identified. I disagree with Dr. Gruden’s statement that there is no RV strain.

IV. List of Cases

I have not testified as an expert witness at trial or deposition in any cases in the previous four years.

V. Statement of Compensation

I am being paid an hourly rate of \$1,000 per hour for all reviews, studies, and testimony in this matter.



Ella A. Kazerooni, M.D., M.S.